CLASSIFICATION ~~CONFIDENTIAL~~ CONFIDENTIAL

50X1-HUM

CENTRAL INTELLIGENCE AGENCY
INFORMATION FROM
FOREIGN DOCUMENTS OR RADIO BROADCASTS

REPORT
CD NO.

COUNTRY	USSR	DATE OF INFORMATION	1950
SUBJECT	Scientific - Geophysics, volcanoes		
HOW PUBLISHED	Bimonthly periodical	DATE DIST.	20 Jun 1951
WHERE PUBLISHED	Leningrad	NO. OF PAGES	3
DATE PUBLISHED	Mar 1950		
LANGUAGE	Russian	SUPPLEMENT TO REPORT NO.	

THIS IS UNEVALUATED INFORMATION

SOURCE Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva, Vol LXXXII, No 2, 1950, pp 209-212.

INDUSTRIAL UTILIZATION OF MUD-CONE GASES

K. B. Ashirov

The proposal made by S. A. Kraskovskiy ("Industrial Utilization of Natural Volcanic Steam and Heat," Izv Vses Geograf Obshch, Vol LXXX, No 4, 1948) is very important and timely. The power potentialities of mud cones, found in the northwest and southeast depressions of the Caucasus, near Kerch around the Azov Sea, in western Turkmen SSR adjoining the Caspian, and in several other places, may become very important in the years to come.

Of particular interest from this standpoint are the eruptions of the volcano Lok-batan, which are distinguished by exceptional periodicity and great intensity. An average of one eruption of Lok-batan every 3½ years, accompanied by combustion of the erupting gases and discharge of large streams of volcanic breccia. In some cases, gas will continue to be liberated after the flame eruptions cease, and sometimes these gases burn in the fissures, without reaching the surface. Such underground combustion is quite common in Lok-batan and has been noted many times by geologists visiting it. The underground combustion heats the edges of the fissure to a cherry-red color, and transforms them when they cool into a slag mass. As we note, however, this combustion usually takes place at depths ranging from several to tens of meters and lasts only a short time. There is no accurate data on the amount of gas liberated by volcanoes during their eruptions because such measurements are impossible at the present time. S. A. Kovalevskiy, judging from the scale of ejection in 1922, (Mud Cones of the South Caspian Area, Baku, 1940) proposed that the approximate gas discharge of the volcano Otmanbozdag was 165 million cubic meters. According to the same author, an average of 27.5 million cubic meters of gas is discharged from Lok-batan in each eruption.

There are no firmly established theories on the depth of the gas reservoirs possessed by mud cones. Without going into great detail on the problem of the origin of mud cones, we note only that most researchers, e.g., I. M. Gubkin, S. F. Fedorov, S. M. Apresov, A. A. Yakubov, A. A. Alizade, and others,

CLASSIFICATION ~~CONFIDENTIAL~~ CONFIDENTIAL

STATE	X	NAVY	X	NSRB		DISTRIBUTION													
ARMY	X	AIR	X	FBI															

connect it with the diapir tectonics and gas- and oil-bearing pools developed in regions of mud volcanism, which at the same time created mud cones.

Thus, from the tectonic standpoint the mud cones are found in the domes of diapir structures having deep faults. Genetically, mud cones are connected with the accumulation of predominantly hydrocarbon gases and apparently oil in their deep reservoirs.

The oil pools now being worked on Apsheron are found mainly in the upper deposits of the productive Pliocene stratum, without any apparent connection with the gas reservoirs of the mud cones. However, using the theory of secondary bedding of oil in the productive stratum as a guide, we are inclined to admit partial participation of deep hydrocarbon gas streams in the formation of large oil and gas accumulations in the productive stratum.

S. A. Kovalevskiy, who connected mud volcanism with deep magmatic pools, has very few supporters at the present time.

The powerful and particularly periodic activity of mud cones, which is best illustrated by Lok-batan, indicates that a continuous flow of hydrocarbon streams from the depths to the reservoir even now. When the reservoirs become surcharged with gases, they periodically discharge through the volcanic craters, which serves as a form of blowoff for them.

Following I. M. Gubkin and S. A. Kovalevskiy, we are inclined to consider that deep Jurassic deposits are the most probable gas-bearing and possibly oil-bearing structures. We see a basis for this in the universal development of Jurassic deposits in the coal-bearing facies, which is an important condition for possible gas production. This gas production is undoubtedly helped by the high temperature of the depths at which the Jurassic lies in the Caspian depression. However, generation of hydrocarbons is also possible in the overlying oil-producing deposits, especially in Paleogene deposits.

The numerous examples of high methane content in the coal seams of almost all deposits in the world and the increase of methane content with depth in these deposits support the possibility that coal-bearing Jurassic strata may supply mud cones with hydrocarbons.

An example of methane abundance in coal seams is the Donets Basin, where, according to N. M. Strakhov ("The Geology of Methane in the Coal-Bearing Stratum of the Donets Basin", Byull Mosk Ob Isp Piroda, Nov Ser, Otd Geolog, Vol XVIII (2), 1940), 8).9 cubic meters of methane in some cases are liberated per ton of coal mined in the Chistyakov trough. It is interesting to note that methane is liberated not only by coal, but also by the coal clays mixed with it.

From the above material we conclude that the power of mud cones, which are collectors of ascending hydrocarbon streams in their reservoirs can be considered only in connection with the reservoir gases and, therefore, we must look to obtaining the latter.

In our opinion, under the high-pressure conditions existing in the reservoir zones, the gases held in the traps must in some cases be in the condensed state, which would make it possible to find oil in the reservoir zones.

An indication of the volume of gases, and possibly oil, in the depths is given by examples cited of the intensity of eruptions in which the gases break through to the surface along faults from depths of several kilometers. We should bear in mind that these faults are not open, but are filled with mud and breccia.

We warmly endorse S. A. Kraskovskiy's proposal and feel that the interested organizations should immediately take steps toward practical organization of experimental deep drilling in a gas reservoir pool, starting with Lok-batan. Judging from geological prerequisites, the depth of the drilling should be from 3.5-4.5 kilometers, i.e., a depth attainable by present-day engineering.

There is every reason to believe that successful drilling in the reservoir beds will open up enormous potentialities for obtaining vast amounts of gas, and possibly oil, on a scale never seen before.

- E N D -

CONFIDENTIAL